# Gardenia volkensii K. Shum ssp. spathulifolia (Stapf & Hutch.) Verdc.

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*Published in:*
Seed Leaflet

*Publication date:*
2009

*Document version*
Publisher's PDF, also known as Version of record

FOREST & LANDSCAPE

# SEED LEAFLET

No. 145 October 2009

KEFRI

## *Gardenia volkensii* K. Shum *ssp. spathulifolia* (Stapf & Hutch.) Verdc.

### Taxonomy and nomenclature

**Family:** Rubiaceae

**Synonyms:** *Gardenia spatulifolia* Stapf & Hutch.

Vernacular/local names: Gardenia (English), Mchimwemwe (Swahili, Digo), Mkimwemwe (Giriama), Mukumuti (Kamba), Shiuna (Luhya), Oltakurukuriet, Oltgurguriet (Maasai).

### Distribution and habitat

Widely distributed in east, central and southern Africa, from Somalia in the north to Transvaal and Namibia in the south. It occurs under a wide range of climates from semi-humid to semi-arid. In Kenya it is found from the coast to the Lake Victoria basin and also in northern Kenya in open woodland, often many concentrated in one area. The species has been widely planted as an ornamental park tree and garden plant throughout the tropics. It occurs on a wide variety of soils, ranging from sand to clay, as well as in rocky areas. The tree prefers well-drained soils and does not withstand waterlogging; often associated with termite mounds.

### Uses

The bright and beautiful large flowers of *Gardenia volkensii* make it a highly appreciated ornamental plant. The plant has various medical properties; infusion of the fruits and roots is used to accelerate vomiting to remove unwanted food from the stomach. The wood is suitable for carving ornaments. Branches of gardenia are used by pastoralists to close the entrances to animal enclosures. The plant is also used for fencing cattle enclosures. The hard fruit shells (pericarp) are used as bottles by children.

### Botanical description

A small branchy, deciduous tree, rarely reaching more than 8 m with relatively dense crown and a short thick and often fluted trunk. Bark is pale grey, smooth on young branches. In older parts, bark is flaking in small, fairly thick sections, resulting in a molted appearance. Leaves are glabrous, in pairs from end of 3-whorled branchlets, broadly spathulate, up to 2½-4 (-5) cm long. Flowers are large, up to 10 cm long, white and fragrant, borne singly. Corolla large, 8-9 merous, showy white, turning yellow after a few days, then brown before dropping, tube up to 10cm long or more.

### Fruit and Seed description

**Fruit:** The fruit is a globose indehiscent berry-capsule, about 10 cm in diameter, warty and grey with 8-10 prominent longitudinal ribs.

*Gardenia volkensii* flower

### Gardenia fruit and leaves

**Seed:** The light brown, disc-shaped flat seeds are about 0.5cm long and are contained within the fruits' whitish-grey acidic pulp. The seeds are smooth and laterally flattened. The seed coat is hard.

There are 35,000-50,000 seeds in a kilogramme. The number of seeds per kilogramme depends on the provenance and the climatic conditions; under suitable climatic conditions, the seed weight tends to be larger than under harsh climatic conditions.

*Gardenia volkensii* fruit and leaves

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*Gardenia volkensii* seeds

## Flowering and fruit development

In Kenya the flowering season is between November and December while fruits mature between April to June. In Zimbabwe flowering is from August to December. The flowering and fruiting season varies from place to place. The fruits remain on the tree for a long time after maturity.

## Seed collection method

The mature grey fruits are collected from the crown by hand picking or cutting fruit stalks.

## Processing and handling

The hard fruits are first allowed to ferment in water before cutting them in half to release the seeds. Seeds are cleaned by enclosing them in a cloth with running water to remove the pulp. They are further cleaned by hand sorting and dried in the sun to the required moisture content (<10%).

## Storage and viability

Seeds can be stored in airtight containers (plastic, kilner jars, and aluminium packets) in cool dry place for 2 to 5 years. For storage lasting to over 5 years e.g. conservation, seeds can be stored at sub-zero temperature for many years with no significant loss of viability. Seeds can remain dormant for a long period.

## Seed sowing and germination

The seed has a hard seed coat and therefore the limiting factor in germination is mainly the seed coat's impermeability to water. For optimum germination the seeds are pretreated by nipping with a nail cutter or a knife. Seeds are sown by broadcasting them thinly and evenly on a seedbed containing sand/soil and light mulch spread over the seedbed to keep it moist. Watering is done in the morning and evening until they germinate. They germinate within 10-20 days. Mulch is removed immediately after germination starts. The expected germination rate is 80-90%. The young seedlings are pricked out when they have 3-4 leaflets. They can be transplanted when they are 30cm tall roughly within 6 months after sowing.

## Selected readings

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This note was prepared in collaboration with the Kenya Forest Research Institute

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